

# System Architecture

Version 1.0

## *extraVEGANza Web Application*

Prepared by: **Anyhow Anything Anywhere**

Bryan Lu We Zhern	U2120341F
Lee An Ni	U2122370D
Li Lin	U2120955E
Nigel Chok Kin Chun	U2122720B
Gambhir Dhruv	U2120075F

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## Revision History

S/N	Version	Description of Change	Name	Date
1	0.1	Draft	Nigel Chok Kin Chun	10 Mar 2023
2	1.0	First version	Nigel Chok Kin Chun	19 Mar 2023

## System Architecture Description

### Overview

extraVEGANza is developed based on the MERN stack with Express.js for backend processing and connection to the database. The front end web application interface is handled by React.js.

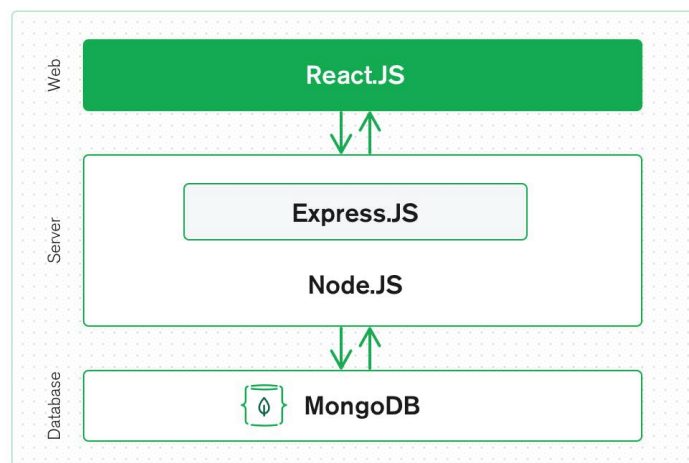
The System Architecture Diagram is attached at the end of this document.

### MERN Stack

The MERN stack consists of Express.JS and Node.JS for the server implementation, and MongoDB for the database implementation. It also uses React.js for the frontend web interface implementation.

**Figure 1**

MERN Stack



*Note. Pictorial representation of the MERN stack. Adapted from "MERN Stack Explained" by MongoDB. Retrieved from <https://www.mongodb.com/mern-stack>.*

## React.JS

React.js is a popular open-source JavaScript library used for building user interfaces (UIs). It uses a declarative approach to building UIs, allowing developers to easily create interactive and dynamic user interfaces. One of the key features of React is its ability to efficiently update and render components. React uses a virtual DOM (Document Object Model) to efficiently update only the parts of the UI that need to be changed, without re-rendering the entire page. This makes React highly performant and efficient. React also supports server-side rendering, making it possible to render components on the server and send them to the client for faster initial loading times and improved SEO.

## Node.JS and Express.JS

Node.js together with Express.js handles the communication with the React front end webpages. Request sent from the frontend will be processed first by Node.js server then will be forwarded to MongoDB through Application Programming Interface (API) to access the database. Data from MongoDB will then be returned to Node.js in the form of JavaScript Object Notation (JSON) which will then be forwarded to React to process.

## MongoDB

MongoDB is a popular NoSQL database management system that uses a document-oriented data model. Unlike traditional relational databases, MongoDB doesn't use tables to store data. Instead, it stores data in JSON-like documents that can have different structures, making it highly flexible and scalable.

MongoDB's document-oriented approach makes it ideal for handling unstructured and semi-structured data. It can handle complex data structures with ease and is capable of handling large volumes of data. MongoDB is also designed to be highly available and scalable, making it a popular choice for high-traffic applications.

